

METEOROLOGICAL CONDITIONS AFFECTING AVIATION IN MESOPOTAMIA.

By C. W. B. NORMAND.

[Abstracted from note in Quar. Jour. Roy. Met'l. Soc., October, 1919, pp. 368-379.]

This paper consists chiefly of a brief discussion of the meteorological conditions of this portion of Asia Minor, such as the general pressure distribution, temperatures at the surface and aloft, and prevailing winds. The winter weather of this region falls under the domination of an offshoot of the central Asian anticyclone, while in summer the dominant factor is the great low-pressure area which lies over southern Persia and Baluchistan. As to temperatures, it is found that the annual range at Bagdad is rather large. The highest temperature ever recorded was 122.8° F. and the lowest was 18.6° F., giving a range of 104.2° F. Objects exposed to the sun may exceed the air temperature by as much as 40° F. Practically nothing is known of upper air temperatures, except that which was observed by kite-balloon companies operating in that region during the war. The prevailing surface wind is northwest and southeast in winter and spring, and in summer the prevailing wind is from between north and west. Aloft, the frequency curves for the whole year show that northwest is by far the most persistent direction to heights of 9,000 feet. There is a tendency, however, for the winds to become westerly at the upper levels. The annual variation of wind velocity is such that there is a maximum in July and a minimum in November. The strong northwest wind of June, July, and August, called the Shamal, is very persistent and raises great dust storms.

The curves showing the variation of wind velocity with height indicate a maximum at about 1,000 feet above the surface. It is found that often a gentle wind at the surface in the early morning may be overrun by a strong wind at a height of 400 feet. As soon as convection starts, the wind above increases the speed of the surface wind, with the result that a dust storm, which may last all day, is produced. An aviator must take cognizance of this fact or he may ascend in early morning and before he is aware of it, the ground will be blotted out by rolling clouds of dust which practically prevent a safe descent. Bumpiness, under such conditions of extreme surface turbulence and convection, is the rule. The so-called "dust devils" (dust whirls), of that region have been observed at 6,500 feet above the surface.

Fog, cloud, and rain are very rare, especially during the summer months, although clouds and fog occur occasionally in winter. At Bagdad, Basrah, and Babylon there are only 26 rainy days per year. Snow, of course, is extremely rare and occurs once in 10 years, as a rule. Aircraft are subject to damage from thunderstorms and hail in March and April. Hailstones 1½ inches in diameter have been observed. The author concludes his note with the following summary:

"From the point of view of weather Iraq should afford more flying days than Britain, though it does not offer as ideal conditions as Egypt. The annoyances and risks which the weather of Iraq offers to aviation are the extremely high temperatures during the day in hot weather causing engine trouble; the occasional risk to the early morning flyer of finding a dust storm raging by the time he wishes to descend; rain and low clouds from November to April; fog in December and January. It should be noted that the nearer an aerodrome is to the Persian hills the more rainfall will it receive."—C. L. M.

SOME OBSERVATIONS OF THE UPPER AIR OVER PALESTINE.¹

By Capt. A. J. BAMFORD.

[Abstract reprinted from Nature (London), Dec. 4, 1919, p. 364.]

This paper gives a brief summary of some upper-air observations made in Palestine during the last two years. Tables and graphs are given showing the monthly averages of the horizontal movements at different altitudes over three stations, at one of which (near Ramleh) observations were kept up continuously for a year. The second part of the paper deals with vertical velocities, and includes frequency curves, showing for each of the layers 0-2,000 feet, 2,000-4,000 feet, and 4,000-6,000 feet, the number of times in each month that the observed velocities differed from the theoretical ones by not more than 10, 20, 30, or 40 per cent, etc. The lowest layer is appreciably the most varied, and in it differences of 50 per cent are not unusual, although the average velocity differs very slightly from theory. In the other layers there is a distinct increase in the compactness of the frequency curves, while the average velocity changes from slightly above to slightly below the theoretical value.

¹ Quar. Jour. Roy. Met'l. Soc., January, 1920, pp. 15-33. Another abstract of this article appeared in Symons's Meteorological Magazine, December, 1919, pp. 133-134.